

REMARKS

Claims 1-7 remain pending, although claims 4-7 are withdrawn from consideration. Claims 1-3 are currently amended. No claims are canceled or added via the present submission.

Basically, applicant's invention includes a combination of a "thermostatic expansion valve" and a "solenoid-operated shut-off valve," as disclosed in *Malone et al.* (U.S. Patent No. 5,979,780), *Dayton* (U.S. Patent No. 6,325,296), and *Martin et al.* (U.S. Patent No. 6,375,085), which were made of record in the Office Action. These references show a common valve element used in place of individual valve elements for the thermostatic expansion valve and the solenoid-operated shut-off valve. Applicant explains as follows why the present rejections should be withdrawn.

Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by *Nose* (U.S. Patent No. 4,646,532). Applicant respectfully submits that the rejection should be withdrawn.

Nose discloses an expansion valve 101 in Fig. 4 that has an electromagnet or solenoid 116, a valve member 112, and a valve rod 111. Applicant acknowledges that perhaps solenoid 116 might be relied upon to teach the "solenoid" of claim 1, that valve member 112 might be relied upon to teach the "common valve element," and that valve rod 111 might be relied upon to teach the "driving force-transmitting member." However, from the figure, valve member 112 and valve rod 111 appear to be permanently coupled, that is, coupled regardless of whether solenoid 116 is energized.

In contrast, claim 1, as amended, specifies that the solenoid is:

... operative to electromagnetically couple the common valve element and the driving force-transmitting member with each other when the solenoid is energized, to thereby transmit displacement of the power element to the common valve

element, *wherein the common valve element and the driving force-transmitting member are not electromagnetically coupled when the solenoid is not energized.*

[*Emphasis added.*] Such configuration differs from that of *Nose*, in which valve member 112 and valve rod 111 are presented in Fig. 4 as apparently permanently coupled, regardless of whether solenoid 116 is energized. For at least this reason, the rejection should be withdrawn.

Applicant adds though that *Nose* discloses the construction of a thermostatic expansion valve that is configured to be capable of changing the urging force of a bias spring, which had been conventionally incapable of being changed, depending on the temperature of an evaporator, using a solenoid. Therefore, the solenoid is capable of changing the urging force of the bias spring, but it does not have the function of transmitting the driving force of the power element to the valve element or blocking the transmission of the driving force of the power element to the valve element. Additionally, there is no function of placing the valve in the fully-closed state, when the solenoid is not energized.

For at least the reasons provided herein, applicant solicits the withdrawal of the anticipation rejection of claim 1.

Claim 2 stands rejected under 35 U.S.C. § 103(a) as obvious over *Nose* in view of *Osumi et al.* (U.S. Patent No. 4,953,825). Applicant respectfully traverses this rejection.

It is acknowledged in the Office Action that *Nose* does not teach that its solenoid includes a “first core,” a “second core,” and a “spring” interposed therebetween as described in claim 2. Accordingly, the rejection relies on *Osumi et al.* to suggest modifying the *Nose* apparatus to have the missing elements. Applicant submits that *Osumi et al.* does not provide the necessary suggestion for such modification.

Applicant of course acknowledges that *Osumi et al.* discloses a flow control valve with a fixed core 5, a movable core 3, and a spring 14 interposed therebetween. Spring 14 normally

biases movable core 3 away from fixed core 5, but when solenoid 4 is energized, movable core 3 is attracted to fixed core 5.

Under MPEP § 2143, to rely on *Osumi et al.* to justify the present rejection, there must be some suggestion or motivation to modify the *Nose* apparatus so that it would include a “first core,” a “second core,” and a “spring” interposed therebetween as claimed. Simply citing fixed core 5, movable core 3, and spring 14 in *Osumi et al.* is not providing a “suggestion or motivation” as required.

For the present rejection, the Office Action includes a statement that the modified *Nose* apparatus would allow for “more positively moving the valve member.” This statement is not clear, because there is no corresponding explanation of what it means to “more positively move” an element.

Even if the meaning were clear, the Office Action provides no explanation of why someone would want this characteristic. The *Nose* apparatus presumably already operates acceptably,¹ so there is no apparent reason why a person would want to modify the apparatus to make it more complex. Even if the modification would really cause “more positive movement” of the valve member, and even if this really were an advantage, the Office Action provides no explanation of why someone would have thought of such this modification beforehand instead of merely appreciating, after learning of the modification, that there would be the benefit of “more positive movement.” Without a prior art showing of someone thinking about such a modification beforehand, there can be no “suggestion or motivation” as required by MPEP § 2143.

¹ Under 35 U.S.C. § 282, a patent is presumed valid, and no reason is provided in the Office Action to think that the *Nose* apparatus does not operate as described in the patent.

For at least this reason alone, the rejection should be withdrawn. As shown above, claim 2 is rewritten in independent form and without the corresponding amendment presently provided to claim 1. Also, claim 2 is amended to describe the invention consistently with the specification, page 9, line 8.

Applicant also adds that *Osumi et al.* relates to an electro-magnetic proportional-flow control valve, and its solenoid operates proportionally. Therefore, even a combination of *Nose* and *Osumi et al.* cannot provide a suggestion or arouse motivation for obtaining a solenoid valve-equipped expansion valve, which operates as a stop valve by the urging force of a spring when the solenoid is not energized.

For at least the reasons provided herein, applicant solicits the withdrawal of the obviousness rejection of claim 2.

Claim 3 stands rejected under 35 U.S.C. § 103(a) as obvious over *Nose* in view of *Fujimoto et al.* (U.S. Patent No. 6,012,301). Applicant respectfully traverses this rejection.

The rejection relies on *Nose* to anticipate the subject matter recited in parent claim 1, but it is acknowledged that *Nose* does teach “a seal member [that] is provided between the shaft and the common valve element” as recited in claim 3. Thus, the rejection relies on *Fujimoto et al.* to suggest modifying the *Nose* apparatus to have this subject matter. Applicant respectfully disagrees that *Fujimoto et al.* provides such a suggestion.

Nose discloses an apparatus in Fig. 4 with valve rod 111 and rod 117. The Office Action provides no indication of which rod is relied upon to teach the “shaft” recited in claim 3. Because parent claim 1 specifies that “the driving force-transmitting member is always in abutment with a power element,” applicants can infer that the rejection relies on valve rod 111.

(If instead the rejection relies on rod 117, the rejection would be improper for the additional reason that this rod does not abut the power element.)

As discussed above, Fig. 4 implies that valve member 112 (relied upon to teach the “common valve element”) and valve rod 111 (seemingly relied upon to teach the “shaft”) are permanently coupled. Therefore, there would be no need to put a “seal member” between valve member 112 and valve rod 111.

Applicant of course acknowledges that, in applicant’s disclosure, V-packing 30 prevents internal refrigerant leakage between common valve element 24 and shaft 19. (See the specification, page 9, line 27, to page 10, line 6). However, common valve element 24 and shaft 19 are not permanently coupled.

Applicant also acknowledges that *Fujimoto et al.* discloses O-ring 40 between rod 316 and the wall of hole 38 of valve body 30. However, rod 316 moves relative to valve body 30 instead of being permanently coupled thereto.

Accordingly, *Nose* does not need a seal member between valve rod 111 and valve member 112 to prevent fluid flow. The Office Action indicates on page 3 in paragraph No. 6 that a teaching of a seal member on a shaft is an adequate teaching to justify the rejection, even if the seal member is not between the shaft and the common valve element as claimed. It is believed that the precise location of the seal member on the shaft has no criticality.

Applicant respectfully disagrees. In *Fujimoto et al.*, O-ring 40 is positioned between two elements, rod 316 and the wall of hole 38 of valve body 30, to prevent leakage between the rod and the wall. If instead O-ring 40 were positioned high enough to be within second path 34, the O-ring could not prevent fluid flow. Thus, the location of O-ring 40 on rod 316 does have criticality.

Also, in applicant's embodiment depicted in Fig. 2, V-packing 30 would not prevent leakage if it were positioned high enough on shaft 19 that it were horizontally adjacent port 15. Indeed, the location of V-packing 30 has criticality.

Perhaps a seal member positioned around valve rod 111 of *Nose* would prevent fluid flow to the disk under diaphragm 106, *if* the seal member were located horizontally to the left of path 107. However, modifying to *Nose* apparatus to have a seal member between valve member 112 and valve rod 111 (to thereby have an apparatus as described in claim 3) would not prevent fluid flow. Accordingly, applicant must disagree that the position of the seal member has no criticality.

For at least this reason alone, the rejection should be withdrawn. As shown above, claim 3 is rewritten in independent form and without the corresponding amendment presently provided to claim 1.

Applicant nonetheless adds that the general thermostatic expansion valve disclosed in *Fujimoto et al.* has an O-ring 40 that prevents leakage of low-pressure refrigerant on a secondary side into a low-pressure refrigerant passage immediately below a power element. An O-ring is also present in applicant's solenoid-equipped expansion valve. More specifically, the seal member recited in claim 3 corresponds to V packing 30 (see Fig. 2), which is used for preventing high-pressure refrigerant on a primary side from leaking to a low-pressure secondary side when the solenoid is not energized to cause common valve element 24 to be seated on valve seat 18 by the urging force of spring 28.

Therefore, even a combination of *Nose* and *Fujimoto et al.* cannot provide a suggestion or arouse motivation for obtaining a solenoid valve-equipped expansion valve that is capable of

preventing refrigerant from leaking via a stop valve when the expansion valve is operating as the stop valve.

For at least the reasons provided herein, applicant solicits the withdrawal of the obviousness rejection of claim 3.

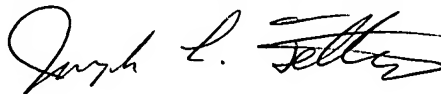
In a separate matter, applicant filed an Information Disclosure Statement (IDS) on April 22, 2005, which is after the mailing date of the Office Action. Applicant requests that the next communication from PTO show that the IDS has been considered.

In view of the remarks above, applicant now submits that the application is in condition for allowance. Accordingly, a Notice of Allowability is hereby requested. If for any reason it is believed that this application is not now in condition for allowance, the Examiner is welcome to contact applicant's undersigned attorney at the telephone number indicated below to discuss resolution of the remaining issues.

If this paper is not timely filed, applicant petitions for an extension of time. The fee for the extension, and any other fees that may be due, may be debited from Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Joseph L. Felber
Attorney for Applicant
Registration No. 48,109
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

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